

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 721743, CST 7:09am, 232/1

SC One zero eight eight, one six five zero zero, one two nine five five, three six one eight five, one four six three four five O. No change, no change one degree in the rise of ignition minus three. Assumes LOY2.

CAP COM Apollo 8 Houston. Roger I made one mistake, horizon window is minus one degree. Over.

SC Minus one degree.

CAP COM Roger. Readback is correct. - Apollo 8 this is Houston, you are GO across the board for LOI2 would like to take the DSE for a dump, over.

SC Roger, you guys - I can understand we are GO for LOI2.

CAPCOM That's affirmative.

SC Before you take the DSE for a dump, let me give you a quick run down on that DSE before you dump it, if you will.

CAPCOM Roger, standing by.

SC Roger.

PAO This is Apollo control, Houston, our GET for ignition of LOI2 is 73 hours 35 minutes and 5 seconds aphelion resulting from this burn 60.7 nautical miles perilune 60.6 nautical miles just about as close to circular as you can get. The burn duration expected 9 seconds delta V for this burn 135 feet per second. On this pass over the front of the Moon our spacecraft was at 115 nautical miles altitude. At the time of acquisition 115 nautical miles in altitude. Our aphelion which also occurs on this - over this side of the Moon 168.5 nautical miles - 168.5. Turning back, continuing to monitor now this is Apollo control, Houston.

SC Okay, Houston, you've got the tape.

CAPCOM Apollo 8, Houston, Roger.

CAPCOM Apollo 8, Houston. Would you believe that Taurus Aida is Pleaides? Over.

SC Thank you.

PAO This is Apollo Control Houston, 72 hours 24 minutes into this mission. In this lull, perhaps we can clarify some of the names you heard being given to craters during that recent television pass. Our geology groups here had to apply some names to certain key landmarks instead of using just number and code, they decided to give them real life names. These are in no way officially named craters. In some cases, I think in most cases, the names aren't even - have not even been submitted to the International body which must pass on those kinds of official names, but to clarify this we thought we would run through some of them that are in use in an area that couldn't be too well observed by telescopes from earth. WE have some pictures to work from, and you distinctly heard Lovell - Anders and Loveil talk about craters named for themselves. Incidentally,

PAO                      this is perhaps a pardonable bit of geologist personality creeping into it. Historically they have been named for discovering geologists or observers. One was got a real time name of John Aaron because he is the electrical environmental and communications console operator who spotted the need for cutting in the need for cutting in the secondary water boiler as we started to circle the moon, that is he noticed the water level was down and he suggested we go to the secondary loop, apparently when all the others were at the window. In future passes, you may hear names like Schmitt, named for Jack Schmitt, Gilruth, the director of this center, Debus the director of the Kennedy Space Center, Kurt Debus. There is an unofficial one, Joe Shea, the former manager of the Apollo Spacecraft program; Ted Freeman, first astronaut killed in an airplane crash in October of 1964. There is a crater bearing the name of George Low, Sam Phillips, Alan Shepard, Mercury, Washington, Apollo, and on either side of the track there is one named for Jim Webb and for Tom Paine, past and present administrators of NASA. Moving along the line we see craters named for Grissom, Gus Grissom, Ed White, Roger Chaffee, clustered three craters fairly close together and just south of the ground track we just heard about. Coming along that same track we see one bearing the name of Chris Kraft, Don Slayton, Jerry Carr, and on along. I'm sure we'll hear more of these. You did hear today about the crater Bassett, so named for Charlie Bassett, the late Charlie N. Bassett, and Elliot See.

END OF TAPE

*no Mueller*

PAO ... Charlie M Bassett and Eliot See, crater right beside it. Two men killed in an airplane crash in St. Louis, in Feb. 1966. At 72 hours, 27 minutes into the flight, this is Apollo Control Houston standing by.

SC We are about to lose it Houston. How far are you on the tape dump?

CAPCOM Apollo 8, this is Houston. It looks like we have lost it, they weren't quite done. We are standing by for a countdown to bio-med switch left, over.

SC Roger. We would like to get it dumped if we could, stand by a second.

SC Did you get it stopped?

CAPCOM Bill, you can go ahead and cut it off.

SC Okay, we are not going to have high-gain now, until the next time around. Can you give me some idea of how much of that dump you got.

CAPCOM Apollo 8, this is Houston. We are negative. We can't tell, you can go ahead and turn it off.

SC Well, how long did you dump it?

CAPCOM Roger, standby, they are checking.

CAPCOM Apollo 8, Houston. Apollo 8, this is Houston reading you with a great deal of noise in the background. Go ahead and rewind your tape and start it in low-bit rate, and we will try and catch that dump at the end of the next Rev.

SC Roger, I would like to have an idea on how much you dumped, in order to know (garble).

CAPCOM Roger, standby.

CAPCOM Apollo 8, Houston, we are working on that time. We will be able to tell you before LOS, over.

CAPCOM Apollo 8, Houston, over.

SC Go ahead.

CAPCOM Roger, did you read my last?

SC That is affirmative. You will give us a rundown when you figure out how much tape you dumped.

CAPCOM Roger. They feel reasonably sure, however, that if you rewind and start low-bit rate, we will be able to get all of the burn and still not run into what needs to be (garble).

SC Houston, Apollo 8.

CAPCOM Apollo 8, Houston, go.

SC Roger, what ref matter are we using for this LOI 2 burn?

CAPCOM Standby Frank, we are talking.

SC Okay, I have an LOI 2 ref matter, but if, I don't understand why the pitch is 175.

END OF TAPE

CAPCOM Apollo 8, Houston.  
SC Go ahead.  
CAPCOM Apollo 8, this is Houston, you are right the ref mat is LOI 2, the ref mat was determined out there before the last midcourse correction and since that time there has been a slight changing of trajectory and the point at which you are burning LOI 2 now is just a shade different than where it was originally planned for.  
SC Okay, thank you.  
CAPCOM Apollo 8, Houston. Apollo 8, Houston, over. Apollo 8, Houston, over. Apollo 8, Houston, over. Apollo 8, Houston, over. Apollo 8, Houston, over. Apollo 8, Houston, over. Apollo 8, Houston, over.  
SC Roger, go ahead, Houston, Apollo 8.  
CAPCOM Apollo 8, this is Houston, DSE is rewind and it's yours available for use in about one hour of low bit rate and two minutes of high bit rate for your burn without running over your good data, over.  
SC Roger, do you read us now, Houston.  
CAPCOM Roger, reading you loud and clear now.  
SC Okay.  
CAPCOM Apollo 8, this is Houston, you are GO for LOI 2 on the next rev, over.  
SC I can understand GO for LOI 2 on the next rev. How do you read, Houston?  
CAPCOM Apollo 8, this is Houston, reading you loud and clear, how me?  
SC Loud and clear.  
CAPCOM Roger, Frank did you get my message on the DSE.  
SC Roger. Roger.  
CAPCOM Okay.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 724826, CST 7:39a 235/1

CAPCOM Apollo 8, Houston. Verify the telemetry  
input switch LOW, over.

SC Roger. Understand telemetry input LOW.

CAPCOM Affirmative.

SC Done.

CAPCOM Roger.

END OF TAPE

CAPCOM Apollo 8, Houston, 5 minutes to LOS,  
over.

SC Thank you, Houston.

CAPCOM Apollo 8, this Houston, 1 minutes to  
LOS. All systems GO, over.

SC Roger.

PAO This is Apollo Control Houston at 73  
hour 04 minutes into the flight of Apollo 8. We are at  
8 seconds away from time of loss of signal. Okay, they  
said goodbye to the ground as they passed over at - on the  
next pass over the back side of the moon. This is pass over  
the back side where we will have our lunar orbit insertion  
burn number 2. To quickly go over those numbers again, we  
have a ground elapsed time of ignition at 73 hours 35 minutes  
05 seconds, apolune 60.7 nautical miles, perilune 60.6  
nautical miles or expected to result from the burn. The  
burn one of very short duration, 9 seconds, delta V 135 feet  
per second. We will be looking for them when we next ac-  
quire at 43 minutes 30 seconds from this time. At 73 hours  
05 minutes into the flight of Apollo 8, this is Apollo Con-  
trol Houston.

END OF TAPE

PAO                      This is Apollo control, Houston at 73 hours 40 minutes into the flight, our present orbital data, at the last time I gave you still carries a perigee of 60.8 nautical miles, that perigee occurring at 8 degrees north by 89 degrees west. An apogee, an estimated apogee - this would be, of 60.4, this would be after circularization. The flight plan at this point is very busy, all three pilots have considerable tasks to do, as opposed to the last several days when their columns were virtual blanks, for instance at 73 hours 40 minutes, right along about now, Frank Borman is busy doing a platform alignment to a specific number, then he is called upon to roll right 180 degrees into a 2 second degree pitch down and so forth. At the same time, Jim Lovell is doing a number of vectors, he is working on the RCS monitors in sharing the values in the tank there and then shortly he is to start a rest period in about 10 minutes, a 2 hour rest period and at the same time Bill Anders is busy with a battery charger, he is doing a SPS monitor check and he is to put a program to acquire the high gain antenna via the manned spaceflight network at a specific time, during all this he will be - the biomedical switch will be on him - so we will be following his heart action. All in all a very busy period onboard, we are due to acquire the spacecraft in about 6 minutes. At 73 hours 43 minutes into the flight, this is Houston.

END OF TAPE

PAO This is Apollo Control Houston. We expect to acquire momentarily. The first call has gone out. We have acquired; we are reading good tank pressures, and here goes the first call.

CAPCOM Apollo 8, Houston. Over.

CAPCOM Apollo 8, Houston. Over.

SC Apollo 8, over.

CAPCOM Apollo 8, Houston. Loud and clear.

How me?

SC Houston, Apollo 8. Over.

CAPCOM Apollo 8, Houston. Loud and clear.

How me?

SC Roger. Reading you loud and clear and ready for the burn status report.

CAPCOM Roger. Ready to copy.

SC Roger. The burn was on time, 11 seconds .2 with a DGX, 1.8 DGY, that's minus 1.8, minus .2 DGZ, delta VC was minus 9.4, VERB 82 gave us an apogee 62 and a perigee of 60.8.

CAPCOM Apollo 8, this is Houston. Roger. Your burn was on time, 11 seconds, DGX was + .2, DGY was - 1.8, DGZ - .2, delta VC - 9.4, apogee 62, perigee 60.8. Over.

SC Roger.

PAO Apollo Control here. That circuit is noisier than we caught on the last two passes, but we have heard the crewmember, I think Borman, confirm an apogee of 62 miles, a perigee of 60.8, a virtually perfect second burn, giving us a circular orbit. We will continue to leave the line open.

PAO Apollo Control again. Apogee on this, the third revolution around the moon will occur at 80 degrees west longitude, 9 degrees 30 minutes north latitude, those are lunar coordinates of course. The perigee on this rev will occur at 9 degrees 29 minutes south latitude and 99 degrees 28 minutes east longitude. That will be on the back side of the moon. And our numbers now show an apogee of 60.9 versus of perigee of 60.5, compared to 62 mile apogee and a 60.8 mile apogee from the crew. Excellent agreement.

PAO The Press Corp should be advised that we are planning a press conference to begin in about 45 minutes in the MSC auditorium, 9:30 Houston time.

SC How do you read? This is Apollo 8.

CAPCOM Apollo 8, Houston. Weak but clear.

SC You are loud and clear.

END OF TAPE

*Summary, "Boy, how slow that?"  
(my notes)*

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 7359 850a 239/1

SC Houston, Apollo 8, we are on high gain now if you want to get the high speed data to look at that burn.

CAPCOM Apollo 8, this is Houston, Roger. Apollo 8, this is Houston we are taking the DSE.

SC Thank you. Can you hold it for about 5 seconds or about 1 minute.

CAPCOM Roger, holding.

SC Okay. Okay, you can dump the data now.

CAPCOM Apollo 8, Houston, Roger, we are taking the DSE for dump.

SC Thank you. We have stated the updated the LM state vector of the burn 66, Houston.

CAPCOM Houston, Roger.

PAO An exceptionally quiet pass across here, we are reading a pitch 192 degrees, it's down and yaw 356 degrees, a 177 degree roll degree attitude, a very steady attitude and I believe they are in orbital rate, that is a read calculated to hold their windows in a specific position and move them in - as they move across the face of the Moon. Lovell should be in a rest period, 2 hours duration now. Perhaps that is why they are keeping quiet. Bill Anders is extremely busy taking pictures. 70 millimeter and 16 millimeters - 70 millimeter stills - 16 millimeter movies.

PAO This is Apollo control, Houston, we are 52 minutes from loss of signal on this pass and let us look over our ECS, Environmental Control Summary Table. The cabin pressure 4.9 and holding very nicely. The cabin temperature 77 degrees, I think that's up a few degrees from yesterday, I don't recall exactly. In general we can expect to see, we should be seeing a slight rise in temperature, this was predicted by the thermo people, a rise particularly in the outside temperature, the outside skin temperature of the spacecraft, a rise of something like 10 to 12 degrees. This was based on an estimates from the 102, the Apollo 7 flight and the experience to date in deep space. The point to be made is that it's - the spacecraft is slightly colder as it reverses from Earth to Moon, that is while in orbit about either body, slightly colder on the outside, inside remains relatively stable. A very quite period and so we will just take the line down, if something occurs we will come back up immediately. At 74 hours 10 minutes into the flight this is Apollo control, Houston.

END OF TAPE

PAO Apollo Control here, 74 hours, 12 minutes. After a long quiet period there, Mike Collins put in a call and he is getting some conversation from Frank Borman, be it ever so brief. Let's hear it now, and we will catch up and go into the live situation.

CAPCOM Apollo 8, this is Houston, over.

SC Hello Michael.

CAPCOM Hey, good morning Frank, we've been tracking you for about 18 minutes now, and we show your orbit 61 by 61-1/2, over.

SC Thank you.

CAPCOM Apollo 8, Houston, your SPS engine looked good on LOI number 2 burn.

SC Thank you.

CAPCOM Apollo 8, Houston.

SC Go ahead.

CAPCOM Bill has got the tape recorder now, we are evaluating the dump. The data is good and we are evaluating the voice quality here shortly.

SC Thank you.

CAPCOM Apollo 8, this is Houston, over.

SC Go ahead Houston, Apollo 8.

CAPCOM I've got a few jolly updates for you, whenever you are ready to copy.

SC Standby.

PAO This is Apollo Control Houston over all of this noise. We will take the line down at this point, and try and figure out where the source of all of our noise is. Fortunately it is an extremely quiet pass; but if there is any further conversation, we will come back up and play it for you. It's 74 hours, 21 minutes into the flight, this is Apollo Control Houston.

END OF TAPE

*How much can dump at once?*

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET: 743500, CST 9:26A 241/1

PAO This is Apollo Control Houston, 74 hours 35 minutes into the flight. And in the last 10 or 15 minutes we've had a couple of brief exchanges with the crew, who still seem to be in a rather resting mode, but here are those exchanges, primarily numbers updates. We have the tapes.

CAPCOM Roger, Apollo 8, Houston. I have a TEI 3, TEI 4 and map update for REV 3 and 4 to read to you. Actually, the TEI 3 update which you have onboard is still valid, but we will not update that one. Which do you want first, the TEI 4 or the map update?

SC TEI 4.

CAPCOM Alright. This is the TEI 4 update. SPS plus G&N 45695 minus 053 plus 141. Are you with me so far, over?

SC So far.

CAPCOM Very good. 077212758 plus 30627 minus 00625 plus 00577 130 018 001 not applicable. Plus 00188 30639 256 30452. Are you with me so far? Over.

SC So far. Who puts the hole in it, though, Ed?

PAO Apollo Control here. We'll break it off at this point so the news conference can be picked up. One other pertinent comment that did not play out in that tape exchange. Frank Borman said - we had noted that his - the voice quality of Bill Anders was not quite what it should be on the data record system and which is being dumped here each rev back to Houston. This was noted and Bill said they were all so busy right now he would do what he could, make notes on the flight plan and that sort of thing, but he - we would just have to understand. So at this time let's break over to the auditorium and pick up the news conference.

END OF TAPE

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SC Okay, go ahead.  
CAPCOM Okay, the last number I gave was  
DELTA-VC picking up at the sextant star, 402730 396 033  
Down 030 left 19. Are you with me, over?  
SC Roger.  
CAPCOM Okay. plus 0858 minus 16500 12960  
36195 146 3721 Comment, north set of stars Sirius and Rigel,  
roll 129, pitch 155, yaw 010, ullage 2 quad 20 seconds from  
quads Bravo and Delta. Horizon on 2 degree line at time of  
ignition minus 3 minutes. Over.  
SC Roger, Houston, we got a TEI 4 SPS/G&N  
45695 minus 053 plus 141 077212758 plus 30627 minus 00625  
plus 00577 180 018 001 NA plus 00188 30639 256 30452 40  
2730 396 033 Down 030 left 19, plus 0858 minus 16500 plus  
12960 plus 36195 1463721 3 is Rigel, 129155010, 2 quads  
20 seconds B and D. Horizon 2 degrees at 6 minus 3.  
CAPCOM That's about the size of it, Frank,  
and a map update for revs 3/4 when you are ready.  
SC Ready.  
CAPCOM Revs 3/4, LOS 750123. Sunrise 751016.  
Prime meridian 751716. AOS 754718. Sunset 762311. Remarks  
Subsolar point 754655. IT 1 acquisition 761117. IT 2  
acquisition 761230 for IT 1 and 2 those acq times are for  
the shaft and trunnion angles equals zero. Over.  
SC Roger, thank you. 750123, 751016,  
751716, 754718, 762311, Subsolar 754655, IT 1 761117,  
IT 2 761230, and the shaft and trunnion at 0.  
CAPCOM Affirmative.  
SC Okay, Houston, we're getting so busy  
that we are having a hard time trying to do a neat job of  
logging. I'll try to do it on the flight plan, and if I  
make any visual observations we'll put them on the DSE and  
I'll try to scribble some notes here and there.  
CAPCOM Roger understand. Now high bit rate is  
working great.  
SC Roger.  
SC Hey, Houston, Apollo 8.  
CAPCOM Alright, Houston, over.  
SC How about giving us the TV times for  
tonight's rev, will you please?  
CAPCOM Yes, we sure will Frank, stand by.  
SC Okay.  
CAPCOM Apollo 8 Houston.  
SC Go ahead.  
CAPCOM Roger, we were checking in to precise  
start and stop time for TV and you are GO for the next  
rev. Over.  
SC I understand, go for the next rev.  
Mike, we'd like to if, we could, time the TV to a passing over

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SC the terminator. WE would like to track the terminator with the TV. Think that's the most impressive thing we've seen and that might be the best thing rather than trying to acquire the earth.

CAPCOM Okay Frank, that's one of the things we are looking at right now. We have you ending at about 86 hours and we're looking at extending that few minutes to include that terminator view. Over.

SC Okay, I don't want us to run into rev 10 (garbled)

CAPCOM Roger, understand.

SC Houston, Apollo 8.

CAPCOM Go ahead Apollo 8.

CAPCOM Apollo 8 Houston.

SC (garbled) the DSE qual is not so good.

How do you read, Mike?

CAPCOM I read you loud and clear. You were cut out about the DSE, say again.

SC Roger. Since the qual - let me give you a quick run down of the status of photo targets. You ready to copy?

CAPCOM Ready to copy.

SC Okay, at REV 1 we got photo target 90 and terminator photography south for near sight terminator. Starting on REV 2 we've got target 12 and target 10, 14, 16, 19, 20, 21, and 23. Unfortunately we got into a - I got into the high speed film there somewhere, and I think those 250mm targets were on high speed. We did change film and starting out in Crater Texas with target 28, 31, 40, 36, was several targets of opportunity that were recorded on the DSE, but apparently lost. Have you been able to copy?

CAPCOM Yes, I'm with you Bill, keep going.

SC Okay, I might be calling up too fast.

Okay, on the third REV we got target 58 and 63 and 65. The training photography was accomplished and it was done on magazine D, which now has, correction that's magazine E which now has 95 exposures. Magazine D is fresh. Magazine K was also used for training photography and it's showing 25.1.

CAPCOM Roger, we copy all that, Bill.

CAPCOM Apollo 8 Houston.

SC Mike this is Frank again.

CAPCOM Go ahead, Frank.

SC Go ahead.

CAPCOM Roger for Bill

SC (Garbled)

CAPCOM Apollo 8 Houston standing by.

SC Alright, I said is Ron Rose around?

CAPCOM Stand by one Frank, we'll look for him and

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CAPCOM while we're doing that, for Bill the DSE voice quality on high bit rate is very good, so if he wants to use the DSE in high bit rate for limited amount of time to record important things we suggest that he do that. We would like him to wait 20 seconds after turning it on prior to talking. Over.

SC Roger, copy.

CAPCOM Thank you, Bill.

CAPCOM Apollo 8, Houston.

SC Go ahead.

CAPCOM Ron Rose is sitting up in the viewing room. He can hear what you say.

SC I wonder if he he ready for experiment P1?

CAPCOM He says thumbs up on P1.

SC (garbled) with reference to the DSE on high bit rate, what I would like to do then is if you got the last pass I'd like to play it - run it back and start at AOS on low bit rate and then go to high when we need it. How would that be?

CAPCOM John Aaron buys it.

SC Okay. Mike this is Frank again.

CAPCOM Go.

SC Roger. Rod and I got together and I was going to record a little - say a little prayer for our church service tonight. And I wonder - I guess that's what we are ready on?

CAPCOM Stand by one, Frank.

SC Alright.

SC Houston, Apollo 8, are you still there?

CAPCOM You are still loud and clear, Frank.

CAPCOM Apollo 8, Houston, go ahead Frank with your message.

SC Okay. This is to Rod Rose and the people at St. Christopher's, actually to people everywhere. Give us, O God, the vision which can see thy love in the world in spite of human failure. Give us the faith, the trust, the goodness in spite of our ignorance and weakness. Give us the knowledge that we may continue to pray with understanding hearts, and show us what each one of us can do to set forth the coming of the day of universal peace. Amen.

CAPCOM Amen.

SC I was supposed to lay read tonight, and I couldn't quite make it.

CAPCOM Roger, I think they understand.

CAPCOM Apollo 8 Houston, over.

SC Roger. Go ahead.

CAPCOM Roger, Frank, we'd like to know about the water chlorination. Have you - when was the last time

*certainly  
a change  
7 subject*

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CAPCOM you chlorinated the water? over.

SC (garbled).

CAPCOM Roger, we stopped you an hour and a half ago. Affirmative?

SC Roger, you know we wouldn't forget that.

CAPCOM Roger.

SC ~~Jim stole a little and it smelled like a bucket of Chlorox about an hour ago.~~

CAPCOM Apollo 8 Houston, say again.

SC I said Jim (garbled) of that chlorine and it smelled like a bucket of Chlorox in here a little while.

CAPCOM Roger, understand.

CAPCOM Apollo 8 Houston, over.

SC (garbled)

CAPCOM Roger. We have 2 and a half minutes to LOS and all systems are looking good. Everything is looking just fine down here, Frank.

SC Thank you.

CAPCOM We'll have some more information on this TV on the next rev. We're not planning any big change in the time, just to extend them a little bit I think, closer to the terminator.

SC Just give us the time, will you, because we just want to know when it is. I'd like to get the terminator if we could, and we've got a little message and that's it.

CAPCOM Roger, we'll do that the next time you come around.

SC Thank you. Okay, and have the E Comm guys keep a sharp watch on our systems. Anders is so busy fooling around with these pictures that not much else gets done.

CAPCOM Roger, the E Comms are doing it.

END OF TAPE

*Spilled*  
*Air to*  
*James*  
*Tape 50*  
*12.8*

APOLLO 8 COL. BORMAN's PRAYER, 12/24/68, GET 753700, CST 10:28a 243/1

PAO                      This is Apollo Control Houston, 75 hours 37 minutes into the flight. Before we lost signal with the spacecraft, some one-half hour ago, I suppose, 20 minutes ago, Frank Borman came up on the line and said he would like to dedicate a prayer to the people of St. Christopher's church, his church here in Seabrook and he added to all the people of the world. Here is that prayer.

CAPCOM                  Apollo 8, Houston. Go ahead, Frank, with your message.

SC                      Okay. This is to Rod Rose and the people of St. Christopher, actually to people everywhere. Give us, oh God, the vision which can see thy love in the world in spite of human failure. Give us the faith to trust the goodness in spite of our ignorance and weakness. Give us the knowledge that we may continue to pray with understanding hearts, and show us what each one of us can do to set forward the coming of the day of universal peace. Amen.

CAPCOM                  Amen.

*repeats*

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET7547, 1038a, 244/1

PAO                      This is Apollo control, Houston, 75 hours 47 minutes and we are due to acquire just any second. A whole host of stations, Acension, Bermuda, Mila, Grand Bahama and Madrid and well and the Canaries. This is the fourth revolution around the Moon, by a manned spacecraft, our orbit is 60.4 nautical miles by 61.7. We've had no attempted comm yet you can hear a little keying going on the background, but just any moment we should get an establishing call. A period of acquisition this time is estimated at an hour and 11 minutes. Let's see if we can get charge C of a receiving telemetry yet. It is on this pass where - in which Bill Anders will do an extensive four rev tracking task. He will do a vertical stereo photography and in considerable detail to chart all the approaches to several landing sites in near the center line - in the center of 20 degrees - I'm sorry - on the face of the Moon, front face. And here goes up the first call from Mike Collins, let's see what we can catch. - And we are advised that we are having antenna problems at our prime site, we have handed it to another site, Goldstone, I believe. You will notice, on some of these transmissions, a lot of background noise, that is being done on the smaller powered antennas from the spacecraft around the high gain antenna, the one which transmits the television pictures and other data, the reception is much clearer. Another call has gone out, here is the conversation.

CAPCOM                  Roger, we have been having a little antenna problem on the ground here, we are reading you now, with a lot of noise in the back ground, how read?

SC                      Inaudible.

CAPCOM                  Roger, Frank, we are still trying to get a little bit better com here, stand by.

CAPCOM                  Apollo 8, this is Houston, over.

SC                      Yea, I can hear you.

CAPCOM                  I understand you are reading us loud and clear, we are barely reading you, would you go to 2 in ACCEPT please, we are going to send you a P27 update.

SC                      Roger. - We are going to accept, Houston.

CAPCOM                  Apollo 8, Houston, you are not readable. We are going to delay the P27 until we get a little bit better lock on you.

PAO                      This is Apollo control, Houston, we are having antenna difficulties. We are going to try some more. standby let's continue to monitor.

CAPCOM                  Going to the LM slot and we would like you as per planned to transfer that to the CSM slot by a VERB 47 ENTER and we would like to just remind you that prior to doing your VERB 47 ENTER manually select P00 and wait for the computer activity lights to go out, did you

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CAPCOM copy, over?  
SC Roger, we copy.  
CAPCOM Okay, Frank, are you still reading me  
loud and clear, over.  
SC Roger, loud and clear.  
CAPCOM Okay, I'll go ahead with a map update.  
Ready to copy.  
SC Hold on a minute.  
CAPCOM Apollo 8, this is Houston, how are you  
reading now?  
SC Go ahead, Houston, this is Apollo 8.  
CAPCOM Apollo 8, this is Houston, with a map up-  
date coming.  
SC Inaudible.  
CAPCOM Roger, Apollo 8, Houston, your map update  
for rev 425 LOS 765959 770906 prime meridian 77 15 47 AOS  
77 45 50 78 22 03, IP 1 position time for control .2 77 29 42,  
IP 1 time closest approach for target B1 78 10 25, over.  
SC Roger, inaudible.  
CAPCOM We will try it again later.  
*Who?* PAO Apollo control here, I want to correct  
something I apparently said, Frank Borman dedicated that  
prayer to St. Johns Episcopal church, he is a member of  
St. Christophers, the confusion is due to the fact that  
Jim Lovell is a member of St. Johns, so we have two  
Episcopalians going to two different churches. I apologize  
the correct name of the church is St. Christopher, we have  
the correct town. Now let's get back and monitor. - We will  
take the line down due to the noise and recording any thing  
back up to you with anything significant. At 76 hours into  
the flight, this is Apollo control, Houston.

END OF TAPE

*no. OK on  
243/1  
(but probably  
incorrect  
in the  
typing)*

to 257/2

~~nothing~~ 11/6/74

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 760900, CST 11:00a 245/1

PAO Apollo Control here, 76 hours 09 minutes into the flight. In the past few minutes, we've established a much cleaner communication with Apollo 8. Here is a sample.

CAPCOM Apollo 8, this is Houston, over.

CAPCOM Apollo 8, this is Houston, over.

SC Roger, Houston. How do you read?

CAPCOM Reading you a lot better, Bill. How

are you reading me?

SC I'm reading you loud and clear and you

copying our low bit data to record this - these tracking passes. Over.

CAPCOM That is affirmative. We are getting low bit data now.

SC Okay. I've played - run the tape recorder back to the beginning. We have quite a bit of high bit, so all you will have to do is record when you are ready.

CAPCOM Roger, stand by one, Bill.

CAPCOM Apollo 8, Houston. Stand by one on the tape recorder dump. We would like you to look at your steam pressure. We think that the primary evaporator may have dried out and if the steam pressure shows off scale low, would you please close the back pressure valve, and re-service the evaporator? Over.

SC Roger.

CAPCOM Apollo 8, Houston. We are ready to send you the P-27 LM state vector update when you are ready over.

SC You will have to wait until this tracking exercise is over, Mike.

CAPCOM Roger, thank you.

END OF TAPE

RCS 251/1

LM state 252/1

trans to Jack Schmitt 257/1

"play" the mission 257/1

Sig  
keep in C.M. when in L.M. Just use  
part of computer to action C.M. still  
vector.

What's T.E.I. 246/1

PAD 246/2

4 - just village 246/3

TV on Moscow and

E. Berlin 247/2

long dry shell 248/1

Good hi-fi in living room 248/1

Temp. variation 249/1

possible landing sites 250/1, 257/1

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 762417, CST 11:16A 246/1

PAO Apollo Control Houston here, 76 hours, 24 minutes. Communication much improved now as we move out on the front side of the Moon, here is how it is going.

SC Houston, Apollo 8.

CAPCOM Apollo 8, this is Houston, are you calling?

SC Roger, you can go ahead now and give the computer the updates and let's get going on the pad messages.

CAPCOM Roger.

SC It is in P00 and ACCEPT. Okay Houston, are you ready to talk about the water boiler problem?

CAPCOM Roger, we copy you in P00 and ACCEPT, and we are sending you a P27 lens stake vector. On the water boiler, it looks like to us the evaporator has been reserviced. How does it look to you, over.

SC Roger, I reserviced it, put it to AUTO, H2O flow to AUTO and the steam pressure went to zero again. So, I tried reservicing it the second time for 1 minute and again no results. I'm in the present process of closing the backpressure valve manually, over.

CAPCOM Roger, understand you tried to reservice it twice, both times steam pressure has gone to zero, and now you are closing the back-pressure valve manually.

SC Roger. Each time I have reserviced it, the steam pressure came up to about .07 to .1 but as soon as the steam and water were put to AUTO the steam pressure went right back down again.

CAPCOM Roger, we copy and we are reading you loud and clear now, Bill. On your map update, did you copy that that I gave you previously?

SC Negative, we have not copied it yet.

CAPCOM Okay, I have it for you again when you are ready to copy.

SC Ready to copy.

CAPCOM This is a map update for revs 4/5. LOS 765959, Sun rise 770906, prime radian 771547, AOS 774550, Sun set 782203, remarks IP1, acquisition time for CP2 is 772942, IP1 time closest approach for target B1, 781025, over.

SC Roger, LOS 765959, Sun rise 770906, 774547, 774550, 782203, IP1, CP2, 772942, IP1 TCA for P1 781025.

CAPCOM That is right and the prime radian time is 771547 and you got your computer back, we've got a good P27 update.

SC Okay, we will go to P00 and TRANSFER.

CAPCOM Roger.

SC Houston, do you have a TEI5 for us?

CAPCOM We are working on it now Frank. We will have it for momentarily.

CAPCOM Apollo 8, Houston.

SC Go.

*my we are all stages of flight provide for S/C crew info. on the burn that showed in made to get back to earth. This would make TEI mean after 5th orbit.*

*TEI Trans Earth Injection?*

CAPCOM Roger, on your back-pressure valve, we would like to know how long after you closed the back-pressure valve the first time - how long was it from the time you closed it until the time you started the reservicing. We would like for you to wait about 15 minutes. That is to prevent any ice from forming due to flash freezing, over.

SC Okay, I started immediately to reservice it.

CAPCOM Apollo 8, Houston. We showed that you closed it this last time about 4 minutes ago, so we would like you to wait another 15 minutes and then try to reservice it again at that time and then go to AUTO, over.

SC Roger.

CAPCOM Roger, thank you. The TEI 4 pad which you have is still valid. We will have a TEI 5 pad for you shortly.

SC Roger. Be advised we are presently in steam pressure MANUAL, and were in H2O flow AUTO, and are now in H2O flow OFF, as of about 5 seconds ago.

CAPCOM Roger, we copy that. We confirm that is a good configuration.

SC Right now, I've got the H2O flow OFF, do we stay that way?

CAPCOM Affirmative. Apollo 8, Houston. On your television update, we propose that you start the TV at the flight plan time of 85 hours, 37 minutes and simply extend the stop time a few minutes. You are currently scheduled to stop at 86 hours and we would like to keep it going until the terminator, which should be approximately 8614, over.

SC Roger.

CAPCOM Frank, I know you are busy up there. We've got the daily news for you when ever and if ever you would like to hear it.

SC We will give you a call.

CAPCOM Apollo 8, this is Houston.

SC Go ahead.

CAPCOM I have the TEI 5 pad for you whenever you are ready to copy.

SC Okay, go ahead.

CAPCOM Okay, TEI 5, SPS/G and N, 45701 minus 043 plus 11607 niner 212603. Are you with me so far?

SC Roger.

CAPCOM Plus 31171 minus 00767 minus 00214180017001, not applicable plus 001883118125 niner 31003. Are you with me, over.

SC Roger.

CAPCOM Roger, 4027113 niner 8033, down 043,

PAD ?  
the ground  
of info  
on it  
say sig  
(this means  
a-h  
a)

CAPCOM left 23 plus 0832 minus 1650012 niner 56362081463 niner 44. North set of stars remain Sirius and Rigel; roll, pitch, and yaw remain same angles 12 niner 155010. Ullage remains 2 quads for 20 seconds, quads B and D. Horizon on 4 degree line at TIG minus 3 minutes, over.

SC Roger, here we go. TEI 5, SPS/G and N 45701 minus 043 plus 116 079212603 plus 31171 minus 00767 minus 00214 180 017 001 NA plus 00188 31181 259 31003 40 2711 398 033 Down 043 left 23 plus 0832 minus 16500 plus 12956 36208 1463944. Set stars are the same. Ullage - we'd like, do you have any objection to using 4 quads for 15 seconds?

CAPCOM No objection to 4 quad ullage ...

SC Okay, we'd like to just go ahead and use 4 quads all times unless we get a lot shorter on fuel than we are now.

CAPCOM Understand.

SC And is that 15 seconds?

CAPCOM Affirmative, 15 seconds, 4 quads.

CAPCOM Apollo 8 -

SC (garbled) horizon is 4 degrees at minus -

CAPCOM That readback is correct, Frank, and we'd like to advise that the voice quality on that high bit rate is excellent. Over.

SC Thank you. Mike, it's 4 quads for 15 seconds. Is that right?

CAPCOM That is affirmative Apollo 8, 4 quads for 15 seconds.

SC Thank you.

PAO This is Apollo Control Houston here with 24 minutes left to run in this period of acquisition. We might make note of our velocity in this revolutions, it is approximately 3560 statute miles per hour, and here goes another call from Mike Collins.

SC Go ahead Houston, Apollo 8.

CAPCOM Roger for Bill. He can go ahead and do a standard reservice on the water now. It's looking good.

SC Okay, you want us to reservice it now?

CAPCOM That's affirmative, and on completion go back to auto.

SC Roger.

PAO During this - Apollo Control here - during this lull we have been looking at the biomedical data and the harness is switched over to Bill Anders. We're looking at a mean heart rate of 68. His high during this particular reporting period is 69, a low of 67. Mean respiration rate 10, activity mode is listed as normal. Cabin pressure 4.9 cabin temperature 79, that's a 2 degree rise from what we saw about an hour or so ago - 77. A little more than 21 minutes

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 762417, CST 11:16A 246/4

PAO                    before loss of signal. We'll just leave  
the line open.

END OF TAPE

PAO This is Apollo Control Houston. Our time 76 hours and 40 minutes, and I think Mike Collins is about to advise the crew that they have a GO for rev 5. Stand by.

SC Go ahead, Houston.

CAPCOM Roger. We are still dumping your tapes. The voice quality on high bit is coming through superb, and you are GO for next rev and we would like to get a brief status on your rest between 60 hours and LOI 1, just to fill in some information for us.

SC We only got a couple of hours rest.

CAPCOM Okay.

SC We're tired right now, but we will have to wait until TEI before we get back to .

CAPCOM All right, you're right.

SC Okay, Houston. The water boiler has been reserviced, backpressure valve closed for 1 minute, water on for 2, and it's now steam pressure auto, H2O flow auto.

CAPCOM Roger, we copy, Bill.

SC If we have a problem - a similar problem again on the back side in the sunlight, might be a good idea to crank the secondary loop until we have AOS. What do you think about that?

CAPCOM Stand by one, Bill.

CAPCOM Apollo 8, Houston.

SC Go ahead, Houston, Apollo 8.

CAPCOM Roger, Jim. In regard to your evaporator, we feel that if you do have a similar problem next time on the back side in the sunlight, check the evaporator outlet temperature, and if it gets above 60, we concur that it would be a good idea to bring up the secondary loop. Over.

SC Roger.

CAPCOM Apollo 8, Houston. When we say bring up the secondary loop, we mean bring up the evaporator only on the secondary loop, copy.

SC Roger.

SC Houston, Apollo 8. We got time for a little news?

CAPCOM Apollo 8, this is Houston, over.

SC I say how about a little bit of that news you promised?

CAPCOM Roger. We got the Interstellar Times here, the December 24 edition. Your TV program was a big success. It was viewed this morning by most of the nations of

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 763904, CST 11:30a 247/2

your neighboring planet, the earth. It was carried live all over Europe, including even Moscow and East Berlin. Also in Japan and all of North and Central America, and parts of South America. We don't know yet how extensive the coverage was in Africa. Are you copying me all right, over?

SC You are loud and clear.

CAPCOM Good. San Diego welcomed home today the Pueblo crew in a big ceremony. They had a pretty rough time of it in the Korean prison. Christmas cease-fire is in effect in Viet Nam, with only sporadic outbreaks of fighting. And if you haven't done your Christmas shopping by now, you better forget it.

SC Thank you.

CAPCOM A couple of Oilers made the All Star team, Webster and Farr.

SC Roger.

END OF TAPE